

IN THE CLAIMS

The following is a claim listing under the new format:

16. (Amended) A reactor comprising:

a catalyst structure comprising a porous support structure and a porous interfacial layer disposed on the porous structure, wherein the porous structure has a first pore size of at least 0.1 μm , wherein the porous interfacial layer has a second pore size less than the first pore size; and
a microchannel;
wherein the catalyst structure is disposed in the microchannel.

17. (Amended) A The reactor of claim 16 comprising:

a catalyst structure comprising a porous structure and a porous interfacial layer disposed on the porous structure, wherein the porous structure has a first pore size of at least 0.1 μm , wherein the porous interfacial layer has a second pore size less than the first pore size;
a reaction chamber wall, wherein the reaction chamber wall is a wall of a microchannel; and
a cooling chamber;
wherein the catalyst structure is disposed in said microchannel, and wherein said reaction chamber wall separates the catalyst structure from the cooling chamber.

18. (Amended) The reactor of claim 17 wherein the porous structure is a coherent structure;

and

wherein the catalyst structure comprises a Fischer-Tropsch catalyst metal selected from the group consisting of cobalt, ruthenium, iron, rhenium, osmium and combinations thereof.

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19. (Original) The reactor of claim 18 wherein the first pore size ranges from 10 μm to 300 μm .

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20. (Original) The reactor of claim 18 wherein the porous structure is a coherent structure;
and
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wherein the first pore size ranges from 10 μm to 300 μm .

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21. (Original) The reactor of claim 16 wherein the porous structure comprises a metal foam
having pores that range from 20 pores per inch to 1000 pores per inch.

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22. (Amended) The reactor of claim 17 wherein the porous support structure comprises a
metal foam, felt or wad.

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23. (Original) The reactor of claim 16 further comprising a catalyst layer deposited on the
interfacial layer.

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24. (Original) The reactor of claim 17 further comprising a catalyst layer deposited on the
interfacial layer.

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25. (Original) The reactor of claim ¹⁵~~24~~ wherein the porous structure comprises a metal foam having pores that range from 20 pores per inch to 1000 pores per inch.

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26. (Amended) The reactor of claim ¹~~16~~ wherein the interfacial layer is continuous over the porous substrate structure.

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27. (Amended) The reactor of claim ⁴~~23~~ wherein the interfacial layer is continuous over the porous substrate structure.

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28. (Original) The reactor of claim ¹~~16~~ wherein the porous structure comprises a foam, felt or wad.

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29. (Original) The reactor of claim ¹¹~~17~~ wherein the porous structure comprises a foam, felt or wad.

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30. (Original) The reactor of claim ¹~~16~~ wherein the catalyst structure has a pore volume of greater than 30%.

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31. (Original) The reactor of claim ¹⁷~~29~~ wherein the interfacial layer is selected from the group consisting of: γ -Al₂O₃, SiO₂, ZrO₂, TiO₂, magnesium oxide, vanadium oxide, chromium oxide,

manganese oxide, iron oxide, nickel oxide, cobalt oxide, copper oxide, zinc oxide, molybdenum oxide, tin oxide, calcium oxide, aluminum oxide, lanthanum series oxide(s), zeolite(s), and combinations thereof.

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~~32.~~ (Original) The reactor of claim ~~16~~ wherein the interfacial layer is selected from the group consisting of: γ -Al₂O₃, SiO₂, ZrO₂, TiO₂, magnesium oxide, vanadium oxide, chromium oxide, manganese oxide, iron oxide, nickel oxide, cobalt oxide, copper oxide, zinc oxide, molybdenum oxide, tin oxide, calcium oxide, aluminum oxide, lanthanum series oxide(s), zeolite(s), and combinations thereof.
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~~33.~~ (Amended) The reactor of claim ~~32~~ wherein the porous support structure is a metal that has been etched with acid prior to applying the interfacial layer.

34. (Canceled)

35. (Canceled)

Cancel claims 34-35 without prejudice or disclaimer.